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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|--------------------------|---------------------|------------------|
| 10/594,790 | 09/29/2006 | Ziya Ramizovich Karichev | GOROD2.001APC | 8137 |

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| EXAMINER |
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WANG, EUGENIA

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| ART UNIT | PAPER NUMBER |
|----------|--------------|

1795

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| NOTIFICATION DATE | DELIVERY MODE |
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07/29/2009

ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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|------------------------------|--------------------------------------|--|--|
| Office Action Summary | Application No. 10/594,790 | Applicant(s) KARICHEV ET AL. | |
| | Examiner EUGENIA WANG | Art Unit 1795 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 28 May 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-5 is/are pending in the application.
- 4a) Of the above claim(s) 4 and 5 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-3 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 29 September 2006 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Election/Restrictions

1. Claims 4-5 are withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected inventions, there being no allowable generic or linking claim. Applicant timely traversed the restriction (election) requirement in the reply filed on May 28, 2009.

Response to Arguments

2. Applicant's election with traverse of Group I (claims 1-3) in the reply filed on May 28, 2009 is acknowledged. The traversal is on the ground(s) that the amended claims now have the same limitations (electrodes where the edges of the current collector and the lead-out in sides of the embedment into the insulating frame are impregnated with a lacquer solution) which reads of the prior art.

This is not found persuasive because the claims of the different groups still do not share the same special technical feature. For example, the special technical feature of Group II lies in the specified method, wherein it is required that the impregnation of the lacquer solution into the edges is different from the application of a sealing layer, wherein the same material must be used for both. This special technical feature is not within Group I, and thus the two groups do not have the same technical feature. This is further supported by the fact that the art (as applied below) reads on Group I and not Group II of the claims. Accordingly, the two groups as set forth in the original restriction requirement do not have the same technical feature.

The requirement is still deemed proper and is therefore made FINAL.

Priority

3. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Information Disclosure Statement

4. The information disclosure statement filed March 26, 2009 has been placed in the application file and the information referred to therein has been considered as to the merits. However, only the translated portions provided have been considered. For full consideration, Examiner invites Applicant to provide translation of the full disclosure.

Drawings

5. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the fact that the edge of the current collector and lead-out sites are impregnated with a lacquer solution must be shown or the feature(s) canceled from the claim(s). (It is noted that the sealing layer [4] at the embedment site [3] appears to be coated on and not impregnated in the current collector/lead-out edge.) No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate

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changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

6. The abstract of the disclosure is objected to because it is longer than 150 words. Correction is required. See MPEP § 608.01(b).

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

7. Claims 1-3 rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim 1 includes the claim language "edges of the current collector and the lead-outs...are impregnated with a lacquer solution." Multiple interpretations can be applied to the claim language. For example (1) "edges of" can be interpreted to apply both to the current collector and lead-outs, such that only the edges of the current collector and the edge of the lead-outs are impregnated or (2) "edges of" can be interpreted to apply to only the current collector, wherein the entirety of the lead-outs must be impregnated with the lacquer solution. Accordingly, as multiple

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interpretations can be applied, the claim language is unclear and thus indefinite. Since claims 2-3 are dependent on claim 1 and fail to rectify the issue, they are rejected for the same reason. (In light of the 112 issue, interpretation (1) has been applied, wherein the support for such an interpretation is found in fig. 1, wherein the leads do not appear to have the sealing material applied to it.)

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to

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consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

8. Claims 1-2 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ru 2183370 (Karichev) as evidenced by the admitted prior art (APA) in view of US 5110691 (Krasij et al.). As Karichev is relied upon as the primary reference, Applicant is again invited to submit a translation of the full disclosure for consideration of the reference.

As to claim 1 Karichev teaches a fuel cell, wherein the electrode has an insulating frame provided with inlet and outlet holes (feed and discharge ports) (abs, left column, lines 1-12). It has a mesh current collector embedded in the frame with lead-outs extending beyond the frames, wherein an active layer and a barrier layer are sequentially applied to the mesh current collector (abs, left column, lines 2-8; fig.1-2). At this point, it is noted that the APA is used as an evidentiary reference as to show that the features set forth above (that are not clearly stated in the abstract and shown in the figures) are positively taught by Karichev (see p1, lines 18-24 of the Specification, which supports that such features are within the Karichev reference).

It is noted that although Karichev does not specifically note the fact that the electrode taught is used in an alkaline fuel cell, such a claim language is merely intended use language, wherein the electrode as described would be capable of operating in an alkaline fuel cell.

While intended use recitations and other types of functional language cannot be entirely disregarded. However, in apparatus, article, and composition claims, intended use must result in a structural difference between the claimed invention and the prior art

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in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim. In a claim drawn to a process of making, the intended use must result in a manipulative difference as compared to the prior art. In re Casey, 370 F.2d 576, 152 USPQ 235 (CCPA 1967); In re Otto, 312 F.2d 937, 938, 136 USPQ 458, 459 (CCPA 1963).

Claims directed to apparatus must be distinguished from the prior art in terms of structure rather than function. In re Danly, 263 F.2d 844, 847, 120 USPQ 528, 531 (CCPA 1959). See also MPEP § 2114.

The manner of operating the device does not differentiate an apparatus claim from the prior art. A claim containing a “recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus” if the prior art apparatus teaches all the structural limitations of the claim. Ex parte Masham, 2 USPQ2d 1647 (Bd. Pat. App. & Inter. 1987)

As applied to the apparatus claims.

Karichev does not teach (a) that the edges of the current collector and lead-outs in sites of the embedment into the insulating frame are impregnated with a lacquer solution and (b) that the periphery of the current collector along an inner edge of the insulating frame includes a sealing layer.

With respect to (a), Krasij et al. teach of a fuel cell with a sealant [30] placed between a frame [34] and the body of the cell (fig. 3A; col. 4, lines 48-52). (For the reasoning as how the sealant constitutes a lacquer solution that impregnates the current collector, see the notes set forth below, starting at the starred “*” section.) The

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motivation for wanting to put a sealant between the place where the body of the cell and the frame overlap is that the usage of such a sealant would prevent the leakage of fuel, oxidant, reaction products, and electrolyte within caustic environments at elevated temperatures (fig. 3; col. 2, lines 3-13). Therefore it would have been obvious to one having ordinary skill in the art at the time the claimed invention was made to put a sealant between the place where the body of the cell and the frame overlap (as taught by Krasij et al.) to the fuel cell system of Karichev (wherein Karichev's fuel cell has the cell body overlapping the entire length of the frame) in order to prevent the leakage of fuel, oxidant, reaction products, and electrolyte within caustic environments at elevated temperatures.

* *First:* It is noted that the sealant [30] impregnates the current collector. This is because, Karichev's current collector (body of the fuel cell that contacts a frame) is mesh, wherein the application on a sealant with in the presence of pressure would inherently cause at least some impregnation.

Where applicant claims a composition in terms of a function, property or characteristic and the composition of the prior art is the same as that of the claim but the function is not explicitly disclosed by the reference, the examiner may make a rejection under both 35 U.S.C. 102 and 103, expressed as a 102/103 rejection.

The fact that a certain result or characteristic may occur or be present in the prior art is not sufficient to establish the inherency of that result or characteristic. In re Rijckaert, 9 F.3d 1531, 1534, 28 USPQ2d 1955, 1957 (Fed. Cir. 1993).

“In relying upon the theory of inherency, the examiner must provide a basis in fact and/or technical reasoning to reasonably support the determination that the allegedly inherent characteristic necessarily flows from the teachings of the applied prior art.” Ex parte Levy, 17 USPQ2d 1461, 1464 (Bd. Pat. App. & Inter. 1990)

In the case of the instant application the basis for expectation of inherency is that when a sealant is applied to a mesh (something having holes) with pressure, some sort of conformity of the sealant to the roughness of the mesh would result in order to provide sealing. This is indicated by Krasij et al., which shows that there is conformity between the seal and what it seals (col. 4, lines 59-66).

The Examiner invites applicant to provide that the prior art products do not necessarily or inherently possess the characteristics of his [or her] claimed product. Whether the rejection is based on inherency’ under 35 U.S.C. 102, on prima facie obviousness’ under 35 U.S.C. 103, jointly or alternatively, the burden of proof is the same...[footnote omitted].” The burden of proof is similar to that required with respect to product-by-process claims. In re Fitzgerald, 619 F.2d 67, 70, 205 USPQ 594, 596 (CCPA 1980) (quoting In re Best, 562 F.2d 1252, 1255, 195 USPQ 430, 433-34 (CCPA 1977)).

Second: It is noted that the sealant of Krasij et al. constitutes a lacquer, as it serves as a protective coating. Office personnel are to give claims their broadest reasonable interpretation in light of the supporting disclosure. *In re Morris*, 127 F.3d 1048, 1054-55, 44 USPQ2d 1023, 1027-28 (Fed. Cir. 1997). Also, limitations appearing in the

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specification but not recited in the claim are not read into the claim. See *In re Zletz*, 893 F.2d 319, 321-22, 13 USPQ2d, 1320, 1322 (Fed. Cir. 1989).

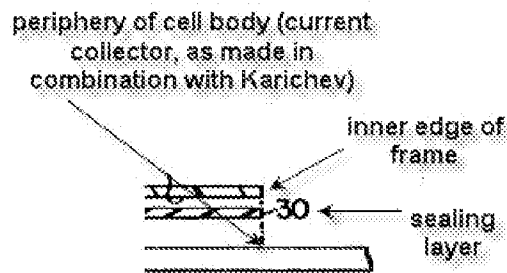
Third: It is noted that the fact that a lacquer solution is applied (indicating that a liquid solution is applied, as a lacquer solution has a volatile solvent) is merely a product by process limitation, wherein the product of the combination is the same as that claimed (since the final product has the protective coating as claimed).

“[E]ven though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process.” *In re Thorpe*, 777 F.2d, 698, 227 USPQ 964, 966 (Fed. Cir. 1985)(citations omitted).

“The Patent Office bears a lesser burden of proof in making out a case of prima facie obviousness for product-by-process claims because of their peculiar nature” than when a product is claimed in the conventional fashion. *In re Fessmann*, 489 F.2d 742, 744, 180 USPQ 324, 326 (CCPA 1974). Once the Examiner provides a rationale tending to show that the claimed product appears to be the same or similar to that of the prior art, although produced by a different process, the burden shifts to applicant to come forward with evidence establishing an unobvious difference between the claimed product and the prior art product. *In re Marosi*, 710 F.2d 798, 802, 218 USPQ 289, 292 (Fed. Cir. 1983). *Ex parte Gray*, 10 USPQ2d 1922 (Bd. Pat. App. & Inter. 1989). See MPEP section 2113.

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As to (b), the sealant [30] of Krasij et al., as applied to the combination of Karichev and Krasij et al. made above, also serves as a sealing layer that runs along an inner edge of the insulating frame. As seen in fig. 3A of Krasij et al. the sealant extends to the an inner edge of the frame [34], wherein where that inner edge, as lined up with the fuel cell body constitutes the periphery of the current collector along that edge. See annotated picture (of fig. 3A of Krasij et al.) below.



As to claim 2, the combination of Karichev and Krasij et al. teach such a limitation, as the sealant [30] of Krasij et al. is said to prevent leakages of the electrolyte (col. 2, lines 10-13). Accordingly, it is viewed as an electrolyte non-wettable substance, as electrolyte is prevented from permeating through.

9. Claim 3 rejected under 35 U.S.C. 103(a) as being unpatentable over Karichev as evidenced by APA in view of Krasij et al., as applied to claims 1-2, in further view of US 3328204 (Grubb).

It is noted that the combination of Karichev as evidenced by APA in view of Krasij et al. yields a product wherein the sealing layer comprises rubber (specifically butyl rubber and ethylene propylene) and provides the following characteristics: preventing the leakage of fuel, oxidant, reaction products, and electrolyte within caustic

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environments at elevated temperatures (col. 2, lines 5-13). However, the combination set forth above does not teach that the sealing layer is a fluoroplastic.

However, Grubb teaches of an electrochemical system (with a similar environment) (fig. 1). Gaskets [11, 15] are sealing pieces used to seal the electrodes [2, 3] to another piece (plates [10, 14]). Specifically, it is noted that gaskets seal, and thus providing the same/analagous function as the sealant of Krasij et al. Grubb's gaskets are embodied to be a rubbery polymer that is not affected by the environment of the cell (temperature, reactants, etc) (col. 4, line 41-49) (wherein it is noted that Krasij et al.'s sealant material is a rubbery polymer that has the same characteristics). Furthermore, Grubb teaches specific rubbery polymers that would work as sealing agents, including rubbery polymers of fluorinated ethylene, resilient copolymers of polytetrafluoroethylene and hexafluoropropylene (fluoroplastic) (col. 4, lines 41-52). Accordingly, it would have been obvious to one of ordinary skill in the art to replace the rubbery polymer sealant as taught by Krasij et al. with a fluorinated rubbery polymer (fluoroplastic), as embodied by Grubb, as both materials are embodied to act as sealants within similar environments (a system with reactants and elevated temperature due to the operation of the cell), wherein the substitution of the fluoroplastic sealant (as taught by Grubb) for the butyl-rubber/ethylene propoylene sealant (of Krasij et al.) would have yielded the predictable result of acting in the same manner – as a sealant. Therefore it would have been obvious to one having ordinary skill in the art at the time the claimed invention was made to use the fluoroplastic sealing material of Grubb et al. as the sealing material within the combined teachings of Karichev as evidenced by APA

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in view of Krasij et al., as the substitution of the fluoroplastic sealing material for another sealing material would have yielded the predictable result of operating as a sealant.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to EUGENIA WANG whose telephone number is (571)272-4942. The examiner can normally be reached on 7 - 4:30 Mon. - Thurs., EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Ryan can be reached on 571-272-1292. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/E. W./

Examiner, Art Unit 1795

/PATRICK RYAN/

Supervisory Patent Examiner, Art Unit 1795

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